

### REMARKS

By this amendment, applicants have amended claim 1 to include therein the limitations previously recited in dependent claim 2 and in canceled dependent claim

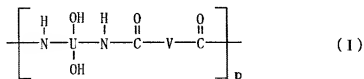
3. Accordingly, claim 2 has been canceled without prejudice or disclaimer.

Applicants, through their undersigned attorney, thank Examiners Higgins and Ruthkosky for the personal interview conducted on August 2, 2011 with the first named inventor, Masayuki Ooe, the assignee's patent representatives, Tomoko Koizumi and Hiroyuki Sonobe and the undersigned. During the interview, the foregoing amendments to the claims were discussed. The reasons why the presently claimed invention is not disclosed in the Tadayuki et al. documents and why the presently claimed invention provides unexpectedly advantageous results were also discussed. Those reasons are set forth more fully hereinafter.

Claims 1, 2, 4-10 and 12-15 stand rejected under 35 U.S.C. 102(b) as being anticipated by JP 2000-305268 to Tadayuki et al. (Tadayuki '268). Claims 1, 4-10 and 12-15 also stand rejected under 35 U.S.C. 102(b) as being anticipated by JP 2001-312063 to Tadayuki et al. (Tadayuki '063). Applicants traverse these rejections and request reconsideration thereof.

The present invention relates to a photosensitive polymer composition, including:

(a) a polyamide having a repeating unit represented by the following general formula (I):



wherein U represents a tetravalent organic group, V represents a bivalent organic group and p is an integer representing a number of the repeating unit;

(b) a compound which generates an acid upon receiving light; and

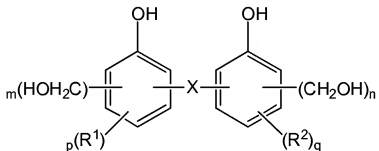
(c) 2,2-bis[3,5-bis(hydroxymethyl)-4-hydroxyphenyl]-1,1,1,3,3,3-hexafluoropropane or 2,2-bis[3,5-bis(methoxymethyl)-4-hydroxyphenyl]-1,1,1,3,3,3-hexafluoropropane. See claim 1.

Neither Tadayuki '268 nor Tadayuki '063 specifically names the compound (c) set forth in claim 1 or the photosensitive polymer composition including such a compound, as presently claimed.

When it is necessary to select portions of teachings within a reference and combine them, e.g., to select various substituents from a list of alternatives given for placement at specific sites on a generic chemical formula to arrive at a specific compound, anticipation can only be found if the classes of substituents are sufficiently limited or well delineated, i.e., if one of ordinary skill in the art is able to "at once envisage the specific compound within the generic chemical formula." In the case of *In re Petering*, 301 F.2<sup>nd</sup> 676, 133 U.S.P.Q. 275 (CCPA 1962), the prior art disclosed a generic chemical formula "wherein X, Y, Z, P, and R" represent either hydrogen or alkyl radicals, R a side chain containing a OH Group." The Court of Customs and Patent Appeals (predecessor to the Court of Appeals for the Federal Circuit) held that this formula, without more, can not anticipate a claim to a specific compound within the general formula since the general formula encompassed a vast number and perhaps even an infinite number of compounds. However, the court determined that a more limited class of preferred substituents consisted only of about 20 compounds and anticipated the claimed compound.

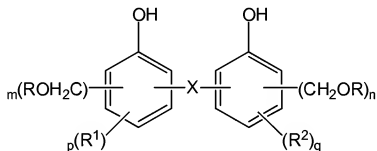
Here, the generic Formula II in each of the Tadayuki '268 and '063 publications encompasses a vast number of compounds; more than 100 species are included in each general formula. Such a broad generic formula encompassing a vast number of compounds can not anticipate the presently claimed composition.

More specifically, compounds of the following general Formula II are described in Tadayuki '268:



where  $\text{R}^1$ ,  $\text{R}^2$ : an alkyl group or an alkenyl group,  $m$  and  $n$ : 1 or 2,  $p$  and  $q$ : 0-3.

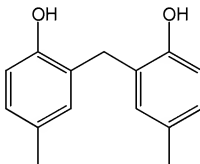
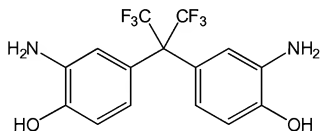
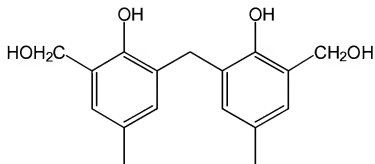
The compounds of the following general Formula II are described in Tadayuki '063:



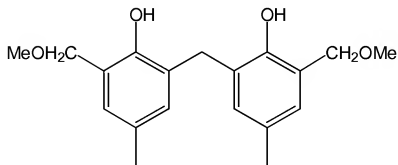
where  $\text{R}$ : an alkyl group or an alkenyl group,  $\text{R}^1$ ,  $\text{R}^2$ : an alkyl group or an alkenyl group,  $m$  and  $n$ : 1 or 2,  $p$  and  $q$ : 0-3.

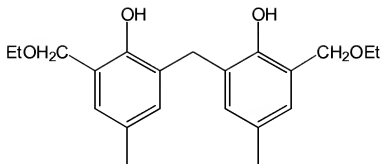
The "Detailed Description" of each indicates, with respect to  $\text{X}$ , "... which replaced some or all of a hydrogen atoms of these hydrocarbon groups with halogen atoms such as a fluorine atom."

In the examples of Tadayuki '268, the only the following three cross-linkers are disclosed:

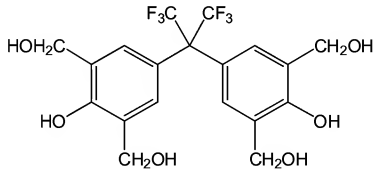


In the examples of Tadayuki '063, the only the following two cross-linkers are disclosed:

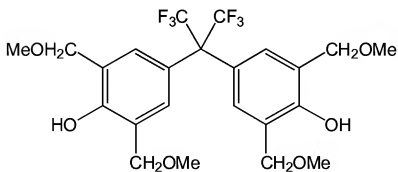




On the other hand, the cross-linker of the present invention is



or:



With respect to the cross-linkers in paragraph [0043] of Tadayuki '268, there is no disclosure concerning the compounds containing fluoroalkyl groups as desirable cross-linkers. With respect to the cross-linkers in paragraph [0044] of Tadayuki '268, there is no disclosure concerning the compounds containing

fluoroalkyl groups, four hydroxy methyl groups and four methoxy methyl groups as the most desirable cross-linkers.

Thus, it is submitted one of ordinary skill in the art would not have at once envisaged 2,2-bis[3,5-bis(hydroxymethyl)-4-hydroxyphenyl]-1,1,1,3,3,3-hexafluoropropane or 2,2-bis[3,5-bis(methoxymethyl)-4-hydroxyphenyl]-1,1,1,3,3,3-hexafluoropropane from Tadayuki '268.

Likewise, with respect to the cross-linkers in paragraph [0043] of Tadayuki '063, there is no disclosure concerning the compounds containing fluoroalkyl groups as desirable cross-linkers. With respect to the cross-linkers in paragraph [0044] of Tadayuki '063, there is no disclosure concerning the compounds containing fluoroalkyl groups, four hydroxy methyl groups and four methoxy methyl groups as the most desirable cross-linkers.

Thus, it is submitted one of ordinary skill in the art would not have at once envisaged 2,2-bis[3,5-bis(hydroxymethyl)-4-hydroxyphenyl]-1,1,1,3,3,3-hexafluoropropane or 2,2-bis[3,5-bis(methoxymethyl)-4-hydroxyphenyl]-1,1,1,3,3,3-hexafluoropropane from Tadayuki '063.

Therefore, neither Tadayuki '268 nor Tadayuki et al. '063 anticipates the presently claimed invention.

Claims 1, 2, 4-10 and 12-15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tadayuki '268. Claims 1, 4-10 and 12-15 also stand rejected under 35 U.S.C. 103(a) as being unpatentable over Tadayuki '063. Applicants traverse these rejections and request reconsideration thereof.

For the reasons noted above, neither Tadayuki '268 nor Tadayuki '063 discloses the photosensitive polymer composition presently claimed. Moreover, it is submitted the composition would not have been obvious over Tadayuki '268 or

Tadayuki '063, especially in view of the unexpectedly advantageous results achieved by the present claimed composition.

More particularly, by employing the compound (c) presently claimed, the claimed composition can achieve effects such as high sensitivity, good shapes of the patterns, high resolution, transparency of the film, and heat durability of the film. If the compound (c) does not (i) have four  $\text{CH}_2\text{OR}$  groups and/or does not have (ii) two OH groups per molecule, the composition can not achieve such effects.

For example, the comparison between the Example 1 and Comparative Example 4 (in which R1 and R2 compound (c) are not fluoroalkyl groups but alkyl groups) demonstrates that lack of feature (ii) results in low sensitivity and poor pattern formation. When  $m=1$  in the formula (II), the resulting composition would also have low sensitivity and poor pattern formation.

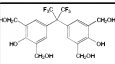
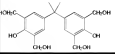
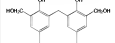
The office action alleges "Tadayuki's '268 and '063 can expose their pattern using a lower energy than Example 1." However, this is not correct when a proper comparison is made. Sensitivity should be compared under the same conditions; the same film thickness and the same film remaining ratio in the unexposed portion, as shown in the table below.

	Cross-Linkers	Sensitivity (mJ/cm <sup>2</sup> )	
		7.5-7.6µm film (Condition in References)	11.7-12.1µm film (Condition in Our Examples)
Our Example 1		139*	280
Comparative Example 4		185*	320
Tadayuki '268		250 (Example 1)	391*
Tadayuki '063		300 (Example 1)	441*

The office action  
compares these  
values.

\* Calculated Values- Note these values are slightly different than those presented to the Examiner during the interview of August 2, 2011

The table below shows the sensitivity and the production efficiency from the Response and Declaration filed on March 07, 2011.

	Cross-Linker	Sensitivity (11.7-12.1µm film thickness)	Exposure Time		Throughput (wafer/hr)
			1 shot (sec)	100 shots (sec)	
Our Example 1		280	0.56	57.7	62.4
Comparative Example 4		320	0.64	65.9	54.6
Tadayuki '268		340*	0.68	70.0	51.4

\* Note the newly calculated value is 391mJ/cm<sup>2</sup>

As can be seen, the good sensitivity of the present invention increases the production efficiency.

The table below (see, the Response and Declaration filed on March 07, 2011) shows T<sub>g</sub> of applicants' examples and Tadayuki '268.



	Cross-Linkers	Tg (°C)
Our Example 1		320
Comparative Example 4		318
Tadayuki '268		303

As can be seen, the cross-linkers of the present invention provide a higher Tg than those of Tadayuki.

Thus, clearly, the presently claimed invention provides unexpectedly advantageous results in comparison with the compositions described in Tadayuki '268 and Tadayuki '063. Accordingly, the presently claimed invention is patentable over the Tadayuki publications.

In view of the foregoing comments and amendments, and in view of the concurrently filed RCE Transmittal, entry of the present amendments and reconsideration and allowance of all claims pending in the above-identified application are respectfully requested.

Applicants request any shortage in fees due in connection with the filing of

this paper be charged to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP,  
Deposit Account No. 01-2135 (case 1270.46327X00), and credit any excess  
payment of fees to such Deposit Account.

Respectfully submitted,

**ANTONELLI, TERRY, STOUT & KRAUS, LLP**

By Alan E. Schiavelli  
Alan E. Schiavelli  
Registration No. 32,087

AES/at  
1300 17th Street N., Suite 1800  
Arlington, Virginia 22209  
Tel: 703-312-6600  
Fax: 703-312-6666